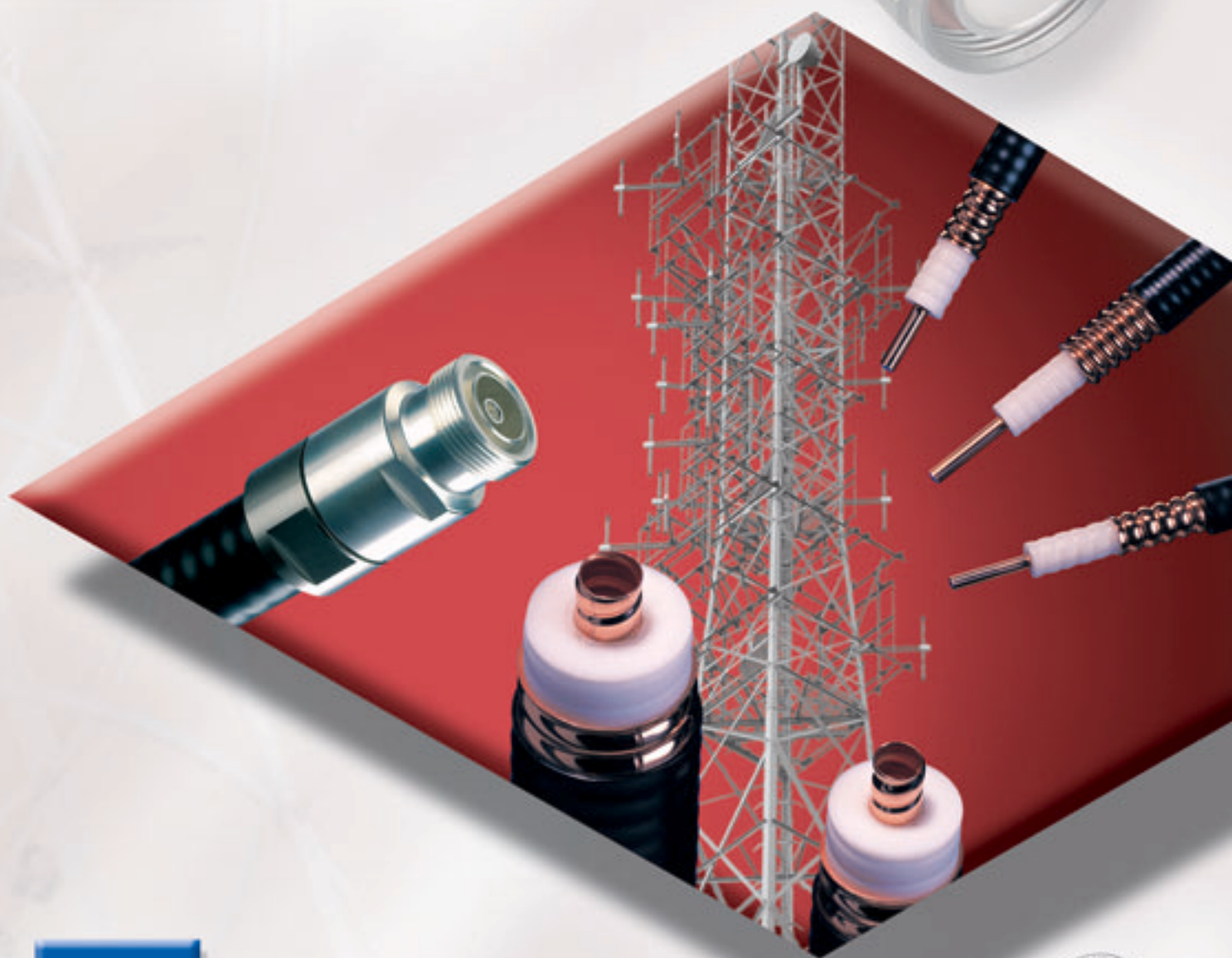


RF-CABLES **ISO**

EC³ : Eupen Corrugated Copper Cables
for radio transmission systems



KABELWERK EUPEN AG





KABELWERK EUPEN AG THE SPECIALIST IN C

The foundation of the cable factory KABELWERK EUPEN AG as manufacturer of electrical cables goes back to the beginning of this century. Today the company has a staff of 950 people producing power cables, telecommunication cables and RF-Cables.

Since broadband transmission became possible, KABELWERK EUPEN AG has been involved in the design and manufacture of coaxial cables.

The introduction of Cable Television in 1962 was decisive for the start of producing coaxial cables on a larger scale.

With the increasing demand for coaxial cables and the intensive R&D to improve cable construction and transmission characteristics, KABELWERK EUPEN AG has become today **one of the leading manufacturer for coaxial cables in the World.**

Over 40 years of experience in the field of RF-Cables, the company constantly developed its extensive manufacturing process bearing in mind the improvement of quality.

In 1999 KABELWERK EUPEN AG developed a new generation of coaxial cable connectors.

Since 1993 **the company is ISO 9001 certified for all its products.**

Today the cables and connectors from KABELWERK EUPEN AG, together is an unbeatable match to guarantee superior performances and long service life.



CABLES



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1/4"	18
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7/8"	24
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Technical data, designs and specifications presented in this catalogue are not binding and are subject to change without prior notice.

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EC³: Eupen Corrugated Copper Cables

Antenna stations in mobile, cellular, microwave and broadcast communication systems require high quality coaxial cables and connectors for very low loss and high power signal transmission.

EUPEN cables and cable accessories are specifically designed for the needs of modern radio communication systems.

EC³ Cable from Eupen offers better electrical performance and greater durability than conventional corrugated copper cables. It is the best choice for UMTS, PCS, cellular antenna feeder cables and other wireless communication applications requiring a cable with the lowest loss and best long term durability. The more durable construction of the EC³ Cable allows us to offer the best warranty in the industry – 12 years.

The electrical specifications of the EC³ Cable are unsurpassed. Every reel is swept for attenuation and return loss before it leaves the factory. Return loss is typically 30 dB and guaranteed to be at least 23 dB over the cellular and PCS bands, when the cable is terminated with EC³ Connectors. Attenuation specifications are the best in the industry.

EC³ Connectors are the easiest attaching corrugated copper cable connectors

made. No soldering is required for the attachment of any of the connectors. High quality silver plating is used on all parts in the electrical path, with electroless nickel plating on all mechanical parts.

They feature superior electrical performances.

EC³ Cables are offered in sizes ranging from 1/4" to 2 1/4". A full range of type N, DIN and EIA EC³ Connectors are available to complete the package, including hanging and grounding accessories, as well as other accessories needed to complete installation.

In addition to the cables in this catalogue we can provide:

- **Phase stabilised, phase measured cable**
- **Low VSWR microwave versions**
- **Special colours**
- **Flooded versions**
- **Cable assemblies**

Our quality products are delivered fast and on time, saving you also time and money. Eupen has a staff of engineers to provide complete technical support for our products and to help you to select the best cable for your application. We can provide training to assure the best installation of your system.

EC³

MICROCELL FOAM DIELECTRIC

EUPEN cables feature innovative design, careful choice of raw materials, consistent manufacturing and quality assurance techniques.

The result is a coaxial cable with superior electrical and mechanical performance.

Our coaxial cable design with low density cellular polyethylene foam dielectric and ring-corrugated copper outer conductor and our 40 years of experience in manufacturing these cables are your guarantee of the supply of a technically optimal construction, featuring:

- **lowest loss**
- **excellent flexibility**
- **excellent RF shielding**
- **very low VSWR**
- **easy and reliable installation of connectors**

The cable **inner conductor** is constructed from copperclad aluminium wire, copper tube or corrugated copper tube, depending on the cable size.

The **microcell-dielectric** is a cellular polyethylene foam manufactured by a proprietary process using ozone friendly expansion gas. A high foaming ratio guarantees low attenuation.

The foam dielectric is bonded to the inner conductor by a precoat layer. This layer ensures good adhesion of the

dielectric to the inner conductor. It also permits easy, clean removal of the dielectric during connector installation.

The ring-corrugation of the copper **outer conductor** captures the dielectric mechanically and ensures good adhesion to the dielectric. This construction prevents relative movement between the inner and the outer conductor due to bending, pulling and temperature variations.

The standard cable construction uses an all weather-resistant black (or grey) **outer sheath**, suitable for indoor, outdoor or underground installation. UV protection is provided by 3% carbon black.

For applications requiring flame-retardance, coaxial cables are available with a flame retardant and halogen free outer sheath. This construction meets international standards for flame propagation, such as IEC 60332-3, smoke density IEC 61034 and acidity of evolved gases IEC 60754-2.

For very severe installation requirements, cable constructions with steel tape or wire armouring are available.

The coaxial cable construction and specification are in accordance with **spec. MIL – C – 28830**.



HALOGEN FREE and FIRE RESISTANT features

Test on *flammability*

a) Test on flammability of single cables

Test in accordance with: VDE 0472 Part 804-B
BS 4066 Part 1
IEC 60332-1

b) Test on flammability of cable bundles

Test in accordance with: VDE 0472 Part 804-C
BS 4066 Part 3 (NMV 1.5)
IEC 60332-3 Cat. C

Test on *smoke density*

Test in accordance with: VDE 0472 Part 816
BS 6724 Appendix F
IEC 61034-1 and 2

Test on *corrosive gas emissions*

Test in accordance with: VDE 0472 Part 813
BS 6425
IEC 60754-2

Test on *insulation integrity*

Test in accordance with: VDE 0472 Part 814
IEC 60331

CHARACTERISTICS

no corrosive gas emissions
insulation
integrity
smoke density
flammability

UMTS 3G Qualified



1/4" Hiflex 3/8" Hiflex* 1/2" Hiflex 7/8" Hiflex 1 1/4" Hiflex

Cable type
Product reference

STANDARD

5042
EC1-50-HF

5082
EC2-50-HF

5092
EC4-50-HF

5228X
EC5-50-HF

5328X
EC6-50-HF
Cable with stand

Cable type
Product reference

HLFR

5042-HLFR
EC1-50-HF-FR

5082-HLFR
EC2-50-HF-FR

5092-HLFR
EC4-50-HF-FR

5228X-HLFR
EC5-50-HF-FR

5328X-HLFR
EC6-50-HF-FR
Cable with halogen free and flame ret

Construction

Outer diameter	(mm)	7.5	9.1	13.5	28.0	39.0
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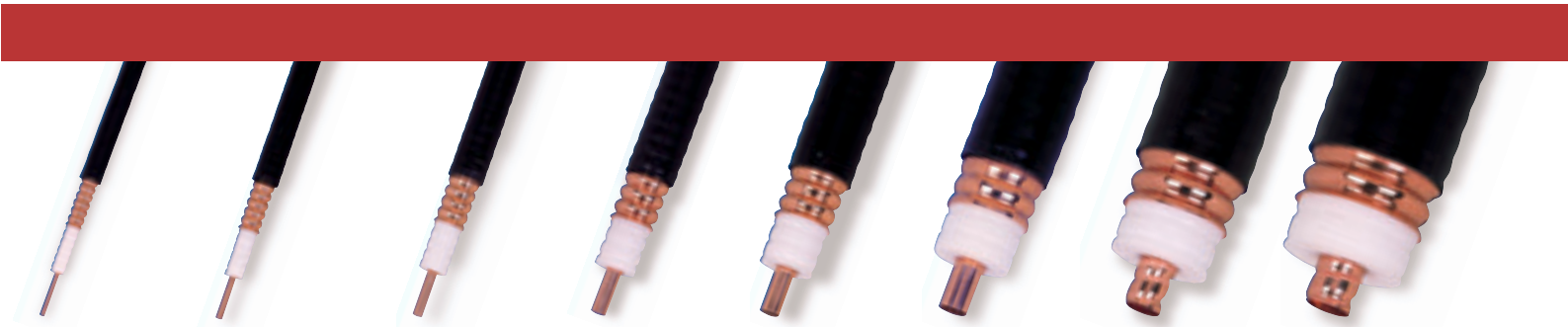
Mechanical

Minimum bending radius						
single bending	(cm)	3	2.5	3	10	20

Electrical

• Velocity ratio	(%)	83	82	82	88	88
• Nominal attenuation at 20°C						
30 MHz	(dB/100m)	3.06	2.28	1.68	0.67	0.47
450 MHz	(dB/100m)	12.20	9.19	6.96	2.76	1.99
960 MHz	(dB/100m)	18.16	13.76	10.57	4.19	3.05
1880 MHz	(dB/100m)	26.00	19.85	15.51	6.14	4.51
2170 MHz	(dB/100m)	28.10	21.49	16.86	6.67	4.91
2400 MHz	(dB/100m)	29.68	22.73	17.89	7.08	5.22
• Mean power rating at 40°C ambient temperature						
30 MHz	(kW)	2.26	3.48	5.66	14.49	22.66
450 MHz	(kW)	0.57	0.86	1.37	3.51	5.40
960 MHz	(kW)	0.38	0.58	0.90	2.31	3.53
1880 MHz	(kW)	0.27	0.40	0.61	1.58	2.38
2170 MHz	(kW)	0.25	0.37	0.57	1.45	2.19
2400 MHz	(kW)	0.23	0.35	0.53	1.37	2.06
• RF peak power	(kW)	3.6	7.2	12.8	90	180
• Cut-off frequency	(GHz)	22	15.6	13.2	5.1	3.3

* Available on request



1/4"	3/8"	1/2"	5/8" *	7/8"	1 1/4"	1 5/8"	2 1/4"
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5062 EC1-50	5088 EC2-50	5128 EC4-50	5168 EC4.5-50	5228 EC5-50	5328 GL EC6-50	5438 EC7-50	5528 EC12-50
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Hard jacket - halogen free in acc. with IEC 60754

5062-HLFR EC1-50-FR	5088-HLFR EC2-50-FR	5128-HLFR EC4-50-FR	5168-HLFR EC4.5-50-FR	5228-HLFR EC5-50-FR	5328GL-HLFR EC6-50-FR	5438-HLFR EC7-50-FR	5528-HLFR EC12-50-FR
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Flame retardant jacket in acc. with IEC 60754, 60332-1, 60332-3 Cat. C & 61034

9.7	11.8	16	21.9	28	39	50	60
3	4	7	10	10	20	20	25
82	88	88	88	88	88	88	88
2.32	1.69	1.17	0.88	0.62	0.44	0.35	0.29
9.38	6.79	4.75	3.61	2.56	1.82	1.52	1.32
14.05	10.14	7.12	5.46	3.86	2.78	2.37	2.10
20.27	14.59	10.30	7.98	5.63	4.10	3.56	3.24
21.95	15.79	11.16	8.66	6.11	4.46	3.89	3.56
23.22	16.69	11.81	9.18	6.48	4.74	4.15	-
3.24	4.11	6.73	9.45	15.06	23.85	32.04	40.40
0.80	1.02	1.66	2.30	3.68	5.72	7.43	8.95
0.54	0.68	1.11	1.52	2.43	3.75	4.79	5.63
0.37	0.48	0.77	1.04	1.67	2.54	3.18	3.65
0.34	0.44	0.71	0.96	1.54	2.33	2.91	3.32
0.32	0.42	0.67	0.91	1.45	2.20	2.73	-
6.9	11	25.6	62	90	184	324	462
18.6	14.2	9.8	6.5	5.3	3.7	2.8	2.3



STANDARD

5042

Cable type :

5042

Reference :

EC1-50-HF

Cable with standard UV resistant PE jacket, halogen free according to IEC 60754

FLAME RETARDANT

HLFR

Cable type :

5042-HLFR

Reference :

EC1-50-HF-FR

Cable with UV resistant, halogen free, low smoke, flame retardant jacket according to IEC 60754, IEC 60332-1, IEC 60332-3 Cat. C and IEC 61034

CHARACTERISTICS

Construction

- **Inner conductor**
 - Material copper clad aluminium wire
 - Diameter (mm) 1.9
- **Dielectric**
 - Material gas-injected cellular polyethylene
 - Diameter (mm) 4.6
- **Outer conductor**
 - Material corrugated copper tube
 - Diameter (mm) 6.4
- **Outer sheath**
 - Material black polyethylene
 - Thickness (mm) 0.55
 - Diameter (mm) 7.5

Mechanical

- **Minimum bending radius**
 - a) single bending (cm) 3
 - b) 15 repeated bends (cm) 3
- **Maximum pulling strength** (daN) 30
- **Recommended temperature range**
 - Storage -70 to +85°C
 - Installation -40 to +60°C
 - Operation -55 to +85°C
- **Maximum length per hoisting grip** (m) 70
- **Maximum hanger spacing** -
- **Flat plate crush resistance** (kg/mm) 0.9
- **Bending moment** (Nm) 1.1
- **Weight** (kg/km) 80

Electrical

- **Characteristic impedance** (Ω) 50 ±1.5
- **Nominal capacity** (pF/m) 80
- **Relative propagation velocity** (%) 83
- **Inductance** (μH/m) 0.200
- **DC-resistance at 20°C**
 - inner conductor (Ω/km) 9.2
 - outer conductor (Ω/km) 4.4
- **RF peak voltage** (kV) 0.6
- **RF peak power** (kW) 3.6
- **Cut-off-frequency** (GHz) 22
- **Insulation resistance** (MΩ.km) >>5000

Frequency (MHz)	Attenuation at 20°C ^(*) (dB/100m)	Mean power rating ^(**) (kW)
10	1.76	3.93
20	2.49	2.77
30	3.06	2.26
80	5.03	1.37
100	5.63	1.23
150	6.93	1.00
200	8.03	0.86
300	9.89	0.70
400	11.48	0.60
450	12.20	0.57
500	12.89	0.54
600	14.18	0.49
700	15.37	0.45
800	16.49	0.42
894	17.49	0.39
960	18.16	0.38
1000	18.56	0.37
1500	23.03	0.30
1700	24.63	0.28
1800	25.40	0.27
1880	26.00	0.27
2000	26.89	0.26
2170	28.10	0.25
2200	28.31	0.24
2300	29.00	0.24
2400	29.68	0.23
2500	30.35	0.23
3000	33.53	0.21
4000	39.31	0.18
6000	49.36	0.14

(*) Nominal values

(**) Ambient temperature = 40°C; Temperature of inner conductor = 100°C; VSWR = 1.0; no solar loading



716MB14X



NM50B14X



NF50P14X



NM50BL14X

CONNECTORS & TOOLS

Reference	Description
NM50B14X	N male, with silicone gasket
NF50P14X	N female, with silicone gasket, panel
NM50BL14X	N male, right angle, with silicone gasket
716M14X	7/16 DIN male, with silicone gasket
716FP14X	7/16 DIN female, with silicone gasket, panel
SPTC50B14X	Cable preparation tool
Cutting knife (d)	Spare parts for cable preparation tools
Peeling knife (e)	(Refer to installation instruction of the tool)



SPTC50B14X

Specification of N-connectors 7/16 connectors

Electrical

• Nominal impedance (Ω)	50	50
• Reflection coefficient at 3 GHz	0.02	0.02
• Insulation resistance ($G\Omega$)	≥ 5	≥ 10
• Test voltage (at sea level) (kV rms, 50 Hz)	2.5	4
• Working voltage (at sea level) (kV rms, 50 Hz)	1	2.7
• Screening effectiveness up to 1 GHz (dB)	>128	>128
• Outer contact resistance (m Ω)	≤ 1	≤ 1
• Inner contact resistance (m Ω)	≤ 1.5	≤ 1.5

Mechanical

• Torque of coupling mechanism (Nm)	≤ 8	≤ 30
• Cable retention (N)	>400	>600

Environmental

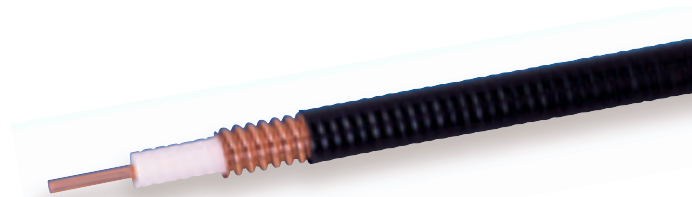
• Temperature range ($^{\circ}\text{C}$)	-40 to +85 $^{\circ}\text{C}$
• Degree of protection (humidity)	IP67, IP68

Materials

• External parts	Passivated silver plated or electroless nickel plated brass
• Outer contact	Passivated silver plated brass
• Inner contact	Passivated silver plated Cu alloy
• Dielectric	TPX/PTFE TPX
• Gaskets	High quality silicone

ACCESSORIES

Description	Reference
• Fixing clamps	see page 36
• Additional weatherproofing	see page 39



STANDARD

5092

Cable type : **5092**
Reference : **EC4-50-HF**

Cable with standard UV resistant PE jacket, halogen free according to IEC 60754

FLAME RETARDANT

HLFR

Cable type : **5092-HLFR**
Reference : **EC4-50-HF-FR**

Cable with UV resistant, halogen free, low smoke, flame retardant jacket according to IEC 60754, IEC 60332-1, IEC 60332-3 Cat. C and IEC 61034

CHARACTERISTICS

Construction

- **Inner conductor**
 - Material copper clad aluminium wire
 - Diameter (mm) 3.55
- **Dielectric**
 - Material gas-injected cellular polyethylene
 - Diameter (mm) 9.0
- **Outer conductor**
 - Material corrugated copper tube
 - Diameter (mm) 12.2
- **Outer sheath**
 - Material black polyethylene
 - Thickness (mm) 0.65
 - Diameter (mm) 13.5

Mechanical

- **Minimum bending radius**
 - a) single bending (cm) 3
 - b) 15 repeated bends (cm) 4
- **Maximum pulling strength** (daN) 70
- **Recommended temperature range**
 - Storage -70 to +85°C
 - Installation -40 to +60°C
 - Operation -55 to +85°C
- **Maximum length per hoisting grip** (m) 70
- **Maximum hanger spacing** 0.5
- **Flat plate crush resistance** (kg/mm) 1.7
- **Bending moment** (Nm) 2.7
- **Weight** (kg/km) 200

Electrical

- **Characteristic impedance** (Ω) 50 ±1
- **Nominal capacity** (pF/m) 82
- **Relative propagation velocity** (%) 82
- **Inductance** (μH/m) 0.200
- **DC-resistance at 20°C**
 - inner conductor (Ω/km) 2.65
 - outer conductor (Ω/km) 3.0
- **RF peak voltage** (kV) 1.13
- **RF peak power** (kW) 12.8
- **Cut-off-frequency** (GHz) 13.2
- **Insulation resistance** (MΩ.km) >>5000

Attenuation and power rating

Frequency (MHz)	Attenuation at 20°C ^(*) (dB/100m)	Mean power rating ^(**) (kW)
10	0.96	9.90
20	1.37	6.96
30	1.68	5.66
80	2.79	3.42
100	3.13	3.04
150	3.88	2.46
200	4.51	2.11
300	5.60	1.70
400	6.53	1.46
450	6.96	1.37
500	7.38	1.29
600	8.15	1.17
700	8.87	1.07
800	9.55	1.00
894	10.16	0.94
960	10.57	0.90
1000	10.82	0.88
1500	13.62	0.70
1700	14.63	0.65
1800	15.12	0.63
1880	15.51	0.61
2000	16.08	0.59
2170	16.86	0.57
2200	17.00	0.56
2300	17.45	0.55
2400	17.89	0.53
2500	18.33	0.52
3000	20.42	0.47
4000	24.29	0.39
6000	31.21	0.31

(*) nominal values

(**) Ambient temperature = 40°C; Temperature of inner conductor = 100°C; VSWR = 1.0; no solar loading



716MBL12X



NF50B12X



716MB12X



NM50BL12X

CONNECTORS & TOOLS

Reference	Description
716MB12X	7/16 DIN male, with silicone gasket
716FB12X	7/16 DIN female, with silicone gasket
716MBL12X	7/16 DIN male, angle, with silicone gasket
NM50B12X	N male, with silicone gasket
NF50B12X	N female, with silicone gasket
NM50BL12X	N male, right angle, with silicone gasket
SPTC50B12X	Cable preparation tool for straight connectors
SPTC50BL12X	Cable preparation tool for right angle connectors
Cutting knife (d)	Spare parts for cable preparation tools
Peeling knife (e)	(Refer to installation instruction of the tool)



SPTC50B12X



SPTC50BL12X

ACCESSORIES

Description	Reference
• Grounding clamp with normal outlet	GCS12X
• Fixing clamps	see page 36
• Additional weatherproofing	see page 39

Specification of N-connectors 7/16 connectors

Electrical

• Nominal impedance (Ω)	50	50
• Reflection coefficient at 3 GHz	0.02	0.02
• Insulation resistance ($G\Omega$)	≥ 5	≥ 10
• Test voltage (at sea level) (kV rms, 50 Hz)	2.5	4
• Working voltage (at sea level) (kV rms, 50 Hz)	1	2.7
• Screening effectiveness up to 1 GHz (dB)	>128	>128
• Outer contact resistance (m Ω)	≤ 1	≤ 1
• Inner contact resistance (m Ω)	≤ 1	≤ 1

Mechanical

• Torque of coupling mechanism (Nm)	≤ 8	≤ 30
• Cable retention (N)	>400	>700

Environmental

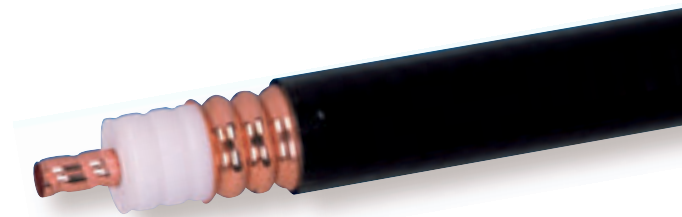
• Temperature range ($^{\circ}\text{C}$)	-40 to +85 $^{\circ}\text{C}$
• Degree of protection (humidity)	IP67, IP68

Materials

• External parts	Passivated silver plated or electroless nickel plated brass
• Outer contact	Passivated silver plated brass
• Inner contact	Passivated silver plated Cu alloy
• Dielectric	PTFE TPX
• Gaskets	High quality silicone



GCS12X



STANDARD

5228X

Cable type : **5228X**
Reference : **EC5-50-HF**

Cable with standard UV resistant PE jacket, halogen free according to IEC 60754

FLAME RETARDANT

HLFR

Cable type : **5228X-HLFR**
Reference : **EC5-50-HF-FR**

Cable with UV resistant, halogen free, low smoke, flame retardant jacket according to IEC 60754, IEC 60332-1, IEC 60332-3 Cat. C and IEC 61034

CHARACTERISTICS

Construction

- **Inner conductor**
 - Material corrugated copper tube
 - Diameter (mm) 9.4
- **Dielectric**
 - Material gas-injected cellular polyethylene
 - Diameter (mm) 23.4
- **Outer conductor**
 - Material corrugated copper tube
 - Diameter (mm) 25.0
- **Outer sheath**
 - Material black polyethylene
 - Thickness (mm) 1.4
 - Diameter (mm) 28.0

Mechanical

- **Minimum bending radius**
 - a) single bending (cm) 10
 - b) 15 repeated bends (cm) 15
- **Maximum pulling strength** (daN) 130
- **Recommended temperature range**
 - Storage -70 to +85°C
 - Installation -40 to +60°C
 - Operation -55 to +85°C
- **Maximum length per hoisting grip** (m) 70
- **Maximum hanger spacing** 1.2
- **Flat plate crush resistance** (kg/mm) 1.7
- **Bending moment** (Nm) 8.4
- **Weight** (kg/km) 460

Electrical

- **Characteristic impedance** (Ω) 50 ±1
- **Nominal capacity** (pF/m) 76
- **Relative propagation velocity** (%) 88
- **Inductance** (μH/m) 0.190
- **DC-resistance at 20°C**
 - inner conductor (Ω/km) 2.5
 - outer conductor (Ω/km) 1.02
- **RF peak voltage** (kV) 3.0
- **RF peak power** (kW) 90
- **Cut-off-frequency** (GHz) 5.1
- **Insulation resistance** (MΩ.km) >>5000

Attenuation and power rating

Frequency (MHz)	Attenuation at 20°C ^(*) (dB/100m)	Mean power rating ^(**) (kW)
10	0.38	25.34
20	0.54	17.82
30	0.67	14.49
80	1.11	8.74
100	1.24	7.79
150	1.54	6.30
200	1.79	5.41
300	2.22	4.36
400	2.59	3.74
450	2.76	3.51
500	2.92	3.31
600	3.23	3.00
700	3.51	2.75
800	3.78	2.56
894	4.02	2.40
960	4.19	2.31
1000	4.28	2.26
1500	5.39	1.80
1700	5.79	1.67
1800	5.98	1.62
1880	6.14	1.58
2000	6.36	1.52
2170	6.67	1.45
2200	6.72	1.44
2300	6.90	1.40
2400	7.08	1.37
2500	7.25	1.33
3000	8.07	1.20
4000	9.60	1.01
6000	-	-

(*) nominal values

(**) Ambient temperature = 40°C; Temperature of inner conductor = 100°C; VSWR = 1.0; no solar loading

CONNECTORS & TOOL

Reference	Description
716MV78XM	7/16 DIN male, O-Ring
716FV78XM	7/16 DIN female, O-Ring
716MA78XM	7/16 DIN male, Sealant injection
716FA78XM	7/16 DIN female, Sealant injection
NM50V78XM	N male, O-Ring
NF50V78XM	N female, O-Ring
NM50A78XM	N male, Sealant injection
NF50A78XM	N female, Sealant injection
SPTC50AV78XM	Cable preparation tool
Inner ring (a)	Spare parts for cable preparation tool
Outer ring (b)	(Refer to installation instruction of the tool)
Spring (c)	
Cutting knife (d)	
Peeling knife (e)	
Flaring knife (f)	
SIL-744 90ml	Sealant for connectors using sealant injection
SIL-744 310 ml	Sealant for connectors using sealant injection

Rem.: • Sealant for connectors using the sealant injection method must be purchased separately.



SPTC50AV78XM

ACCESSORIES

Description	Reference
• Grounding clamp with parallel outlet	GCS78PAR
• Fixing clamps	see page 36
• Additional weatherproofing	see page 39
• Lace-up hoisting grip	HG-78
• Pre-laced hoisting grip	HG-78-L
	see page 38



NF50A78XM



716FV78XM

Specification of N-connectors 7/16 connectors

Electrical

• Nominal impedance (Ω)	50	50
• Reflection coefficient at 3 GHz	0.02	0.02
• Insulation resistance ($G\Omega$)	≥ 5	≥ 10
• Test voltage (at sea level) (kV rms, 50 Hz)	2.5	4
• Working voltage (at sea level) (kV rms, 50 Hz)	1	2.7
• Screening effectiveness up to 1 GHz (dB)	>128	>128
• Outer contact resistance (m Ω)	≤ 0.7	≤ 0.7
• Inner contact resistance (m Ω)	≤ 1	≤ 0.8

Mechanical

• Torque of coupling mechanism (Nm)	≤ 8	≤ 30
• Cable retention (N)	>400	>1000

Environmental

• Temperature range ($^{\circ}\text{C}$)	-40 to +85 $^{\circ}\text{C}$
• Degree of protection (humidity)	IP67, IP68

Materials

• External parts	Passivated silver plated or electroless nickel plated brass
• Outer contact	Passivated silver plated brass
• Inner contact	Passivated silver plated Cu alloy
• Dielectric	PTFE TPX
• Gaskets	High quality silicone



GCS78PAR



STANDARD

5328X

Cable type :

5328X

Reference :

EC6-50-HF

Cable with standard UV resistant PE jacket, halogen free according to IEC 60754

FLAME RETARDANT

HLFR

Cable type :

5328-HLFR

Reference :

EC6-50-HF-FR

Cable with UV resistant, halogen free and flame retardant jacket according to IEC 60754, IEC 60332-1 and IEC 60332-3 Cat. C

CHARACTERISTICS

Construction

- **Inner conductor**
 - Material corrugated copper tube
 - Diameter (mm) 13.6
- **Dielectric**
 - Material gas-injected cellular polyethylene
 - Diameter (mm) 33.5
- **Outer conductor**
 - Material corrugated copper tube
 - Diameter (mm) 36.0
- **Outer sheath**
 - Material black polyethylene
 - Thickness (mm) 1.5
 - Diameter (mm) 39.0

Mechanical

- **Minimum bending radius**
 - a) single bending (cm) 20
 - b) 15 repeated bends (cm) 30
- **Maximum pulling strength** (daN) 200
- **Recommended temperature range**
 - Storage -70 to +85°C
 - Installation -40 to +60°C
 - Operation -55 to +85°C
- **Maximum length per hoisting grip** (m) 70
- **Maximum hanger spacing** 1.4
- **Flat plate crush resistance** (kg/mm) 3.4
- **Bending moment** (Nm) 25
- **Weight** (kg/km) 830

Electrical

- **Characteristic impedance** (Ω) 50 ±1
- **Nominal capacity** (pF/m) 76
- **Relative propagation velocity** (%) 88
- **Inductance** (μH/m) 0.190
- **DC-resistance at 20°C**
 - inner conductor (Ω/km) 1.8
 - outer conductor (Ω/km) 0.5
- **RF peak voltage** (kV) 4.25
- **RF peak power** (kW) 180
- **Cut-off-frequency** (GHz) 3.3
- **Insulation resistance** (MΩ.km) >>5000

Attenuation and power rating

Frequency (MHz)	Attenuation at 20°C ^(*) (dB/100m)	Mean power rating ^(**) (kW)
10	0.27	39.73
20	0.38	27.90
30	0.47	22.66
80	0.79	13.62
100	0.89	12.12
150	1.10	9.78
200	1.28	8.39
300	1.59	6.74
400	1.86	5.76
450	1.99	5.40
500	2.11	5.09
600	2.33	4.60
700	2.55	4.22
800	2.74	3.91
894	2.92	3.67
960	3.05	3.53
1000	3.12	3.44
1500	3.94	2.72
1700	4.25	2.53
1800	4.39	2.44
1880	4.51	2.38
2000	4.68	2.30
2170	4.91	2.19
2200	4.95	2.17
2300	5.09	2.11
2400	5.22	2.06
2500	5.35	2.01
3000	5.98	1.79
4000	-	-
6000	-	-

(*) nominal values

(**) Ambient temperature = 40°C; Temperature of inner conductor = 100°C; VSWR = 1.0; no solar loading



NM50V114M



716FA114M

CONNECTORS & TOOL

Reference	Description
716MV114M	7/16 DIN male, O-Ring
716FV114M	7/16 DIN female, O-Ring
716MA114M	7/16 DIN male, Sealant injection
716FA114M	7/16 DIN female, Sealant injection
NM50V114M	N male, O-Ring
NF50V114M	N female, O-Ring
NM50A114M	N male, Sealant injection
NF50A114M	N female, Sealant injection
SPTC50AV114M	Cable preparation tool
Inner ring (a)	Spare parts for cable preparation tool
Outer ring (b)	(Refer to installation instruction of the tool)
Spring (c)	
Cutting knife (d)	
Peeling knife (e)	
SIL-744 90ml	Sealant for connectors using sealant injection
SIL-744 310 ml	Sealant for connectors using sealant injection

Rem.: • Sealant for connectors using the sealant injection method must be purchased separately.



SPTC50AV114M

ACCESSORIES

Description	Reference
• Grounding clamp with parallel outlet	GCS114PAR
• Fixing clamps	see page 36
• Additional weatherproofing	see page 39
• Lace-up hoisting grip	HG-114
• Pre-laced hoisting grip	HG-114-L
	see page 38

Specification of N-connectors 7/16 connectors

Electrical

• Nominal impedance (Ω)	50	50
• Reflection coefficient at 3 GHz	0.02	0.02
• Insulation resistance ($G\Omega$)	≥ 5	≥ 10
• Test voltage (at sea level) (kV rms, 50 Hz)	≥ 5	≥ 10
• Working voltage (at sea level) (kV rms, 50 Hz)	≥ 5	≥ 10
• Screening effectiveness up to 1 GHz (dB)	≥ 5	≥ 10
• Outer contact resistance (m Ω)	≥ 0.7	≥ 0.7
• Inner contact resistance (m Ω)	≥ 1	≥ 0.8

Mechanical

• Torque of coupling mechanism (Nm)	50	50
• Cable retention (N)	>400	>1000

Environmental

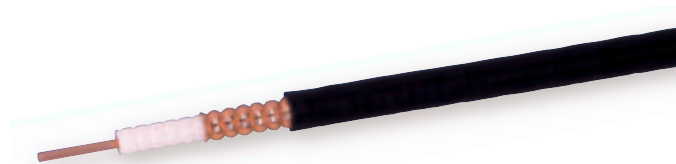
• Temperature range ($^{\circ}\text{C}$)	-40 to +85 $^{\circ}\text{C}$
• Degree of protection (humidity)	IP67, IP68

Materials

• External parts	Passivated silver plated or electroless nickel plated brass
• Outer contact	Passivated silver plated brass
• Inner contact	Passivated silver plated Cu alloy
• Dielectric	PTFE TPX
• Gaskets	High quality silicone



GCS114PAR

**STANDARD**

5062

Cable type :

5062

Reference :

EC1-50

Cable with standard UV resistant PE jacket, halogen free according to IEC 60754

FLAME RETARDANT

HLFR

Cable type :

5062-HLFR

Reference :

EC1-50-FR

Cable with UV resistant, halogen free, low smoke, flame retardant jacket according to IEC 60754, IEC 60332-1, IEC 60332-3 Cat. C and IEC 61034

CHARACTERISTICS**Construction**

- **Inner conductor**
 - Material copper clad aluminium wire
 - Diameter (mm) 2.4
- **Dielectric**
 - Material gas-injected cellular polyethylene
 - Diameter (mm) 6.5
- **Outer conductor**
 - Material corrugated copper tube
 - Diameter (mm) 7.5
- **Outer sheath**
 - Material black polyethylene
 - Thickness (mm) 1.1
 - Diameter (mm) 9.7

Mechanical

- **Minimum bending radius**
 - a) single bending (cm) 3
 - b) 15 repeated bends (cm) 8
- **Maximum pulling strength** (daN) 40
- **Recommended temperature range**
 - Storage -70 to +85°C
 - Installation -40 to +60°C
 - Operation -55 to +85°C
- **Maximum length per hoisting grip** (m) 70
- **Maximum hanger spacing** -
- **Flat plate crush resistance** (kg/mm) 0.8
- **Bending moment** (Nm) 1.5
- **Weight** (kg/km) 110

Electrical

- **Characteristic impedance** (Ω) 50 ±1
- **Nominal capacity** (pF/m) 82
- **Relative propagation velocity** (%) 82
- **Inductance** (μH/m) 0.200
- **DC-resistance at 20°C**
 - inner conductor (Ω/km) 5.85
 - outer conductor (Ω/km) 3.3
- **RF peak voltage** (kV) 0.83
- **RF peak power** (kW) 6.9
- **Cut-off-frequency** (GHz) 18.6
- **Insulation resistance** (MΩ.km) >>5000

Attenuation and power rating

Frequency (MHz)	Attenuation at 20°C(*) (dB/100m)	Mean power rating(**) (kW)
10	1.33	5.64
20	1.89	3.98
30	2.32	3.24
80	3.83	1.96
100	4.29	1.75
150	5.29	1.42
200	6.14	1.23
300	7.58	0.99
400	8.81	0.85
450	9.38	0.80
500	9.91	0.76
600	10.92	0.69
700	11.86	0.63
800	12.73	0.59
894	13.52	0.56
960	14.05	0.54
1000	14.36	0.52
1500	17.90	0.42
1700	19.18	0.39
1800	19.79	0.38
1880	20.27	0.37
2000	20.98	0.36
2170	21.95	0.34
2200	22.12	0.34
2300	22.68	0.33
2400	23.22	0.32
2500	23.76	0.32
3000	26.33	0.29
4000	31.02	0.24
6000	39.25	0.19

(*) nominal values

(**) Ambient temperature = 40°C; Temperature of inner conductor = 100°C; VSWR = 1.0; no solar loading

CONNECTORS & TOOLS

Reference	Description
716MA14	7/16 DIN male, O-Ring
716MAL14	7/16 DIN male, right angle, O-Ring
NM50A14	N male, O-Ring
NF50A14	N female, O-Ring
NM50AL14	N male, right angle, O-Ring
SPTC50A14	Cable preparation tool
Cutting knife (d)	Spare parts for cable preparation tools
Peeling knife (e)	(Refer to installation instruction of the tool)



SPTC50A14



NF50A14



NM50AL14

Specification of N-connectors 7/16 connectors

Electrical

• Nominal impedance (Ω)	50	50
• Reflection coefficient at 3 GHz	0.02	0.02
• Insulation resistance (G Ω)	≥ 5	≥ 10
• Test voltage (at sea level) (kV rms, 50 Hz)	2.5	4
• Working voltage (at sea level) (kV rms, 50 Hz)	1	2.7
• Screening effectiveness up to 1 GHz (dB)	>128	>128
• Outer contact resistance (m Ω)	≤ 0.5	≤ 0.5
• Inner contact resistance (m Ω)	≤ 1	≤ 1

Mechanical

• Torque of coupling mechanism (Nm)	≤ 8	$\leq 30 \leq 38$
• Cable retention (N)	>400	>700

Environmental

• Temperature range (°C)	-40 to +85°C
• Degree of protection (humidity)	IP67, IP68

Materials

• External parts	Passivated silver plated or electroless nickel plated brass
• Outer contact	Passivated silver plated brass
• Inner contact	Passivated silver plated Cu alloy
• Dielectric	PTFE TPX
• Gaskets	High quality silicone

ACCESSORIES

Description	Reference
• Grounding clamp with normal outlet	GCS14
• Fixing clamps	see page 36
• Additional weatherproofing	see page 39



GCS14

**STANDARD****5088**

Cable type : **5088**
 Reference : **EC2-50**

Cable with standard UV resistant PE jacket, halogen free according to IEC 60754

FLAME RETARDANT**HLFR**

Cable type : **5088-HLFR**
 Reference : **EC2-50-FR**

Cable with UV resistant, halogen free, low smoke, flame retardant jacket according to IEC 60754, IEC 60332-1, IEC 60332-3 Cat. C and IEC 61034

CHARACTERISTICS**Construction**

- **Inner conductor**
 - Material copper clad aluminium wire
 - Diameter (mm) 3.25
- **Dielectric**
 - Material gas-injected cellular polyethylene
 - Diameter (mm) 8.4
- **Outer conductor**
 - Material corrugated copper tube
 - Diameter (mm) 9.6
- **Outer sheath**
 - Material black polyethylene
 - Thickness (mm) 1.1
 - Diameter (mm) 11.8

Mechanical

- **Minimum bending radius**
 - a) single bending (cm) 4
 - b) 15 repeated bends (cm) 12
- **Maximum pulling strength** (daN) 55
- **Recommended temperature range**
 - Storage -70 to +85°C
 - Installation -40 to +60°C
 - Operation -55 to +85°C
- **Maximum length per hoisting grip** (m) 70
- **Maximum hanger spacing** 0.5
- **Flat plate crush resistance** (kg/mm) 1.2
- **Bending moment** (Nm) 2.8
- **Weight** (kg/km) 140

Electrical

- **Characteristic impedance** (Ω) 50 ±1
- **Nominal capacity** (pF/m) 76
- **Relative propagation velocity** (%) 88
- **Inductance** (μH/m) 0.190
- **DC-resistance at 20°C**
 - inner conductor (Ω/km) 3.1
 - outer conductor (Ω/km) 2.65
- **RF peak voltage** (kV) 1.05
- **RF peak power** (kW) 11
- **Cut-off-frequency** (GHz) 14.2
- **Insulation resistance** (MΩ.km) >>5000

Attenuation and power rating

Frequency (MHz)	Attenuation at 20°C ^(*) (dB/100m)	Mean power rating ^(**) (kW)
10	0.97	7.17
20	1.38	5.05
30	1.69	4.11
80	2.78	2.50
100	3.12	2.23
150	3.84	1.81
200	4.45	1.56
300	5.49	1.26
400	6.38	1.09
450	6.79	1.02
500	7.18	0.97
600	7.90	0.88
700	8.57	0.81
800	9.20	0.75
894	9.76	0.71
960	10.14	0.68
1000	10.37	0.67
1500	12.90	0.54
1700	13.81	0.50
1800	14.25	0.49
1880	14.59	0.48
2000	15.10	0.46
2170	15.79	0.44
2200	15.91	0.44
2300	16.31	0.43
2400	16.69	0.42
2500	17.08	0.41
3000	18.90	0.37
4000	22.23	0.31
6000	28.04	0.25

(*) nominal values

(**) Ambient temperature = 40°C; Temperature of inner conductor = 100°C; VSWR = 1.0; no solar loading



NF50V38



716MA38

CONNECTORS

Reference	Description
716MV38	7/16 DIN male, O-Ring
716FV38	7/16 DIN female, O-Ring
716MA38	7/16 DIN male, Sealant injection
716FA38	7/16 DIN female, Sealant injection
NM50V38	N male, O-Ring
NF50V38	N female, O-Ring
NM50A38	N male, Sealant injection
NF50A38	N female, Sealant injection
SIL-744 90ml	Sealant for connectors using sealant injection
SIL-744 310 ml	Sealant for connectors using sealant injection

Rem.: • Sealant for connectors using the sealant injection method must be purchased separately.

Specification of N-connectors 7/16 connectors

Electrical

• Nominal impedance (Ω)	50	50
• Reflection coefficient at 3 GHz	0.02	0.02
• Insulation resistance ($G\Omega$)	≥ 5	≥ 10
• Test voltage (at sea level) (kV rms, 50 Hz)	2.5	4
• Working voltage (at sea level) (kV rms, 50 Hz)	1	2.7
• Screening effectiveness up to 1 GHz (dB)	>128	>128
• Outer contact resistance (m Ω)	≤ 1	≤ 1
• Inner contact resistance (m Ω)	≤ 1	≤ 1

Mechanical

• Torque of coupling mechanism (Nm)	≤ 8	$\leq 30 \leq 38$
• Cable retention (N)	>400	>700

Environmental

• Temperature range ($^{\circ}\text{C}$)	-40 to +85 $^{\circ}\text{C}$
• Degree of protection (humidity)	IP67, IP68

Materials

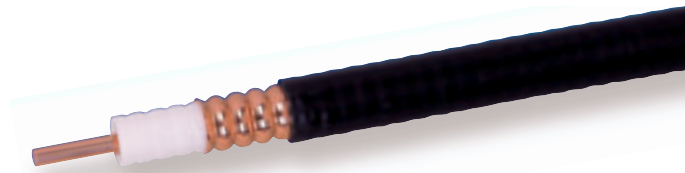
• External parts	Passivated silver plated or electroless nickel plated brass
• Outer contact	Passivated silver plated brass
• Inner contact	Passivated silver plated Cu alloy
• Dielectric	TPX
• Gaskets	High quality silicone

ACCESSORIES

Description	Reference
• Grounding clamp with normal outlet	GCS38
• Fixing clamps	see page 36
• Additional weatherproofing	see page 39



GCS38

**STANDARD****5128**

Cable type :

5128

Reference :

EC4-50

Cable with standard UV resistant PE jacket, halogen free according to IEC 60754

FLAME RETARDANT**HLFR**

Cable type :

5128-HLFR

Reference :

EC4-50-FR

Cable with UV resistant, halogen free, low smoke, flame retardant jacket according to IEC 60754, IEC 60332-1, IEC 60332-3 Cat. C and IEC 61034

CHARACTERISTICS**Construction**

- **Inner conductor**
 - Material copper clad aluminium wire
 - Diameter (mm) 4.8
- **Dielectric**
 - Material gas-injected cellular polyethylene
 - Diameter (mm) 12.4
- **Outer conductor**
 - Material corrugated copper tube
 - Diameter (mm) 13.7
- **Outer sheath**
 - Material black polyethylene
 - Thickness (mm) 1.1
 - Diameter (mm) 16.0

Mechanical

- **Minimum bending radius**
 - a) single bending (cm) 7
 - b) 15 repeated bends (cm) 12.5
- **Maximum pulling strength** (daN) 100
- **Recommended temperature range**
 - Storage -70 to +85°C
 - Installation -40 to +60°C
 - Operation -55 to +85°C
- **Maximum length per hoisting grip** (m) 70
- **Maximum hanger spacing** 1
- **Flat plate crush resistance** (kg/mm) 1.9
- **Bending moment** (Nm) 3.5
- **Weight** (kg/km) 235

Electrical

- **Characteristic impedance** (Ω) 50 ±1
- **Nominal capacity** (pF/m) 76
- **Relative propagation velocity** (%) 88
- **Inductance** (μH/m) 0.190
- **DC-resistance at 20°C**
 - inner conductor (Ω/km) 1.48
 - outer conductor (Ω/km) 1.87
- **RF peak voltage** (kV) 1.6
- **RF peak power** (kW) 25.6
- **Cut-off-frequency** (GHz) 9.8
- **Insulation resistance** (MΩ.km) >>5000

Attenuation and power rating

Frequency (MHz)	Attenuation at 20°C ^(*) (dB/100m)	Mean power rating ^(**) (kW)
10	0.67	11.74
20	0.95	8.27
30	1.17	6.73
80	1.93	4.08
100	2.17	3.64
150	2.67	2.95
200	3.10	2.54
300	3.83	2.06
400	4.46	1.77
450	4.75	1.66
500	5.02	1.57
600	5.53	1.43
700	6.01	1.31
800	6.45	1.22
894	6.85	1.15
960	7.12	1.11
1000	7.28	1.08
1500	9.09	0.87
1700	9.74	0.81
1800	10.06	0.78
1880	10.30	0.77
2000	10.66	0.74
2170	11.16	0.71
2200	11.25	0.70
2300	11.53	0.68
2400	11.81	0.67
2500	12.09	0.65
3000	13.40	0.59
4000	15.81	0.50
6000	20.06	0.39

(*) nominal values

(**) Ambient temperature = 40°C; Temperature of inner conductor = 100°C; VSWR = 1.0; no solar loading



NF50A12



716FV12



716MAL12

CONNECTORS & TOOL

Reference	Description
716MV12	7/16 DIN male, O-Ring
716FV12	7/16 DIN female, O-Ring
716MA12	7/16 DIN male, Sealant injection
716FA12	7/16 DIN female, Sealant injection
716MVL12	7/16 DIN male, angle, O-Ring
716MAL12	7/16 DIN male, right angle, Sealant injections
NM50V12	N male, O-Ring
NF50V12	N female, O-Ring
NM50A12	N male, Sealant injection
NF50A12	N female, Sealant injection
NM50VL12	N male, angle, O-Ring
NM50AL12	N male, right angle, Sealant injection
SPTC50AV12	Cable preparation tool
Inner ring (a)	Spare parts for cable preparation tool
Outer ring (b)	(Refer to installation instruction of the tool)
Spring (c)	
Cutting knife (d)	
Peeling knife (e)	
SIL-744 90ml	Sealant for connectors using sealant injection
SIL-744 310 ml	Sealant for connectors using sealant injection



SPTC50AV12

ACCESSORIES

Description	Reference
• Grounding clamp with parallel outlet	GCS12PAR
• Fixing clamps	see page 36
• Additional weatherproofing	see page 39
• Lace-up hoisting grip	HG-12
• Pre-laced hoisting grip	HG-12-L
	see page 38

Specification of N-connectors 7/16 connectors

Electrical

• Nominal impedance (Ω)	50	50
• Reflection coefficient at 3 GHz	0.02	0.02
• Insulation resistance (G Ω)	≥ 5	≥ 10
• Test voltage (at sea level) (kV rms, 50 Hz)	2.5	4
• Working voltage (at sea level) (kV rms, 50 Hz)	1	2.7
• Screening effectiveness up to 1 GHz (dB)	>128	>128
• Outer contact resistance (m Ω)	≤ 1	≤ 1
• Inner contact resistance (m Ω)	≤ 1	≤ 1

Mechanical

• Torque of coupling mechanism (Nm)	≤ 8	≤ 30
• Cable retention (N)	>500	>1000

Environmental

• Temperature range (°C)	-40 to +85°C
• Degree of protection (humidity)	IP67, IP68

Materials

• External parts	Passivated silver plated or electroless nickel plated brass
• Outer contact	Passivated silver plated brass
• Inner contact	Passivated silver plated Cu alloy
• Dielectric	TPX/PTFE TPX
• Gaskets	High quality silicone



GCS12PAR

**STANDARD**

5228

Cable type :

5228

Reference :

EC5-50

Cable with standard UV resistant PE jacket, halogen free according to IEC 60754

FLAME RETARDANT

HLFR

Cable type :

5228-HLFR

Reference :

EC5-50-FR

Cable with UV resistant, halogen free, low smoke, flame retardant jacket according to IEC 60754, IEC 60332-1, IEC 60332-3 Cat. C and IEC 61034

CHARACTERISTICS**Construction**

- **Inner conductor**
 - Material smooth copper tube
 - Diameter (mm) 9.1
- **Dielectric**
 - Material gas-injected cellular polyethylene
 - Diameter (mm) 23.5
- **Outer conductor**
 - Material corrugated copper tube
 - Diameter (mm) 25.0
- **Outer sheath**
 - Material black polyethylene
 - Thickness (mm) 1.4
 - Diameter (mm) 28.0

Mechanical

- **Minimum bending radius**
 - a) single bending (cm) 10
 - b) 10 repeated bends (cm) 25
- **Maximum pulling strength** (daN) 170
- **Recommended temperature range**
 - Storage -70 to +85°C
 - Installation -40 to +60°C
 - Operation -55 to +85°C
- **Maximum length per hoisting grip** (m) 70
- **Maximum hanger spacing** 1.2
- **Flat Plate Crush resistance** (kg/mm) 1.7
- **Bending moment** (Nm) 14.5
- **Weight** (kg/km) 530

Electrical

- **Characteristic impedance** (Ω) 50 ±1
- **Nominal capacity** (pF/m) 76
- **Relative propagation velocity** (%) 88
- **Inductance** (μH/m) 0.190
- **DC-resistance at 20°C**
 - inner conductor (Ω/km) 1.05
 - outer conductor (Ω/km) 1.0
- **RF peak voltage** (kV) 3.0
- **RF peak power** (kW) 90
- **Cut-off-frequency** (GHz) 5.3
- **Insulation resistance** (MΩ.km) >>5000

Attenuation and power rating

Frequency (MHz)	Attenuation at 20°C ^(*) (dB/100m)	Mean power rating ^(**) (kW)
10	0.36	26.32
20	0.51	18.52
30	0.62	15.06
80	1.03	9.11
100	1.16	8.12
150	1.43	6.57
200	1.66	5.65
300	2.06	4.56
400	2.40	3.92
450	2.56	3.68
500	2.71	3.47
600	2.99	3.15
700	3.25	2.89
800	3.50	2.69
894	3.72	2.53
960	3.86	2.43
1000	3.95	2.38
1500	4.96	1.90
1700	5.32	1.77
1800	5.50	1.71
1880	5.63	1.67
2000	5.84	1.61
2170	6.11	1.54
2200	6.16	1.53
2300	6.32	1.49
2400	6.48	1.45
2500	6.64	1.42
3000	7.38	1.27
4000	8.74	1.08
6000	-	-

(*) nominal values

(**) Ambient temperature = 40°C; Temperature of inner conductor = 100°C; VSWR = 1.0; no solar loading

CONNECTORS & TOOL

Reference	Description
716MV78M	7/16 DIN male, O-Ring
716FV78M	7/16 DIN female, O-Ring
716MA78M	7/16 DIN male, Sealant injection
716FA78M	7/16 DIN female, Sealant injection
NM50V78M	N male, O-Ring
NF50V78M	N female, O-Ring
NM50A78M	N male, Sealant injection
NF50A78M	N female, Sealant injection
SPTC50AV78M	Cable preparation tool
Inner ring (a)	Spare parts for cable preparation tool
Outer ring (b)	(Refer to installation instruction of the tool)
Spring (c)	
Cutting knife (d)	
Peeling knife (e)	
Flaring knife (f)	
SIL-744 90ml	Sealant for connectors using sealant injection
SIL-744 310 ml	Sealant for connectors using sealant injection

Rem.: • Sealant for connectors using the sealant injection method must be purchased separately.
• EIA connectors available on request.



SPTC50AV78M

ACCESSORIES

Description	Reference
• Grounding clamp with parallel outlet	GCS78PAR
• Fixing clamps	see page 36
• Additional weatherproofing	see page 39
• Lace-up hoisting grip	HG-78
Pre-laced hoisting grip	HG-78-L
	see page 38



NM50A78M



716FV78M

Specification of N-connectors 7/16 connectors

Electrical

• Nominal impedance (Ω)	50	50
• Reflection coefficient at 3 GHz	0.02	0.02
• Insulation resistance (G Ω)	≥ 5	≥ 10
• Test voltage (at sea level) (kV rms, 50 Hz)	2.5	4
• Working voltage (at sea level) (kV rms, 50 Hz)	1	2.7
• Screening effectiveness up to 1 GHz (dB)	>128	>128
• Outer contact resistance (m Ω)	≤ 0.7	≤ 0.7
• Inner contact resistance (m Ω)	≤ 1	≤ 0.8

Mechanical

• Torque of coupling mechanism (Nm)	≤ 8	≤ 30
• Cable retention (N)	>400	>1000

Environmental

• Temperature range (°C)	-40 to +85°C
• Degree of protection (humidity)	IP67, IP68

Materials

• External parts	Passivated silver plated or electroless nickel plated brass
• Outer contact	Passivated silver plated brass
• Inner contact	Passivated silver plated Cu alloy
• Dielectric	PTFE TPX
• Gaskets	High quality silicone



GCS78PAR

**STANDARD****5328 GL**

Cable type : 5328 GL
Reference : EC6-50

Cable with standard UV resistant PE jacket, halogen free according to IEC 60754

FLAME RETARDANT**HLFR**

Cable type : 5328 GL-HLFR
Reference : EC6-50-FR

Cable with UV resistant, halogen free and flame retardant jacket according to IEC 60754, IEC 60332-1, IEC 60332-3 Cat. C

CHARACTERISTICS**Construction**

- **Inner conductor**
 - Material smooth copper tube
 - Diameter (mm) 13.0
- **Dielectric**
 - Material gas-injected cellular polyethylene
 - Diameter (mm) 33.5
- **Outer conductor**
 - Material corrugated copper tube
 - Diameter (mm) 36.0
- **Outer sheath**
 - Material black polyethylene
 - Thickness (mm) 1.5
 - Diameter (mm) 39.0

Mechanical

- **Minimum bending radius**
 - a) single bending (cm) 20
 - b) 15 repeated bends (cm) 40
- **Maximum pulling strength** (daN) 200
- **Recommended temperature range**
 - Storage -70 to +85°C
 - Installation -40 to +60°C
 - Operation -55 to +85°C
- **Maximum length per hoisting grip** (m) 70
- **Maximum hanger spacing** 1.4
- **Flat plate crush resistance** (kg/mm) 3.4
- **Bending moment** (Nm) 53
- **Weight** (kg/km) 970

Electrical

- **Characteristic impedance** (Ω) 50 ±1
- **Nominal capacity** (pF/m) 76
- **Relative propagation velocity** (%) 88
- **Inductance** (μH/m) 0.190
- **DC-resistance at 20°C**
 - inner conductor (Ω/km) 0.68
 - outer conductor (Ω/km) 0.51
- **RF peak voltage** (kV) 4.3
- **RF peak power** (kW) 184
- **Cut-off-frequency** (GHz) 3.7
- **Insulation resistance** (MΩ.km) >>5000

Attenuation and power rating

Frequency (MHz)	Attenuation at 20°C ^(*) (dB/100m)	Mean power rating ^(**) (kW)
10	0.25	41.78
20	0.35	29.35
30	0.44	23.85
80	0.72	14.36
100	0.81	12.78
150	1.01	10.32
200	1.17	8.86
300	1.46	7.13
400	1.71	6.10
450	1.82	5.72
500	1.93	5.39
600	2.13	4.88
700	2.33	4.48
800	2.51	4.15
894	2.67	3.90
960	2.78	3.75
1000	2.84	3.66
1500	3.59	2.90
1700	3.86	2.70
1800	3.99	2.61
1880	4.10	2.54
2000	4.25	2.45
2170	4.46	2.33
2200	4.50	2.31
2300	4.62	2.25
2400	4.74	2.20
2500	4.85	2.14
3000	5.42	1.92
4000	-	-
6000	-	-

(*) nominal values

(**) Ambient temperature = 40°C; Temperature of inner conductor = 100°C; VSWR = 1.0; no solar loading



NF50V114M



716MA114M

CONNECTORS & TOOL

Reference	Description
716MV114M	7/16 DIN male, O-Ring
716FV114M	7/16 DIN female, O-Ring
716MA114M	7/16 DIN male, Sealant injection
716FA114M	7/16 DIN female, Sealant injection
NM50V114M	N male, O-Ring
NF50V114M	N female, O-Ring
NM50A114M	N male, Sealant injection
NF50A114M	N female, Sealant injection
SPTC50AV114M	Cable preparation tool
Inner ring (a)	Spare parts for cable preparation tool
Outer ring (b)	(Refer to installation instruction of the tool)
Spring (c)	
Cutting knife (d)	
Peeling knife (e)	
SIL-744 90ml	Sealant for connectors using sealant injection
SIL-744 310 ml	Sealant for connectors using sealant injection

Rem.: • Sealant for connectors using the sealant injection method must be purchased separately.
• EIA connectors available on request.



SPTC50AV114M

ACCESSORIES

Description	Reference
• Grounding clamp with parallel outlet	GCS114PAR
• Fixing clamps	see page 36
• Additional weatherproofing	see page 39
• Lace-up hoisting grip	HG-114
• Pre-laced hoisting grip	HG-114-L
	see page 38

Specification of N-connectors 7/16 connectors

Electrical

• Nominal impedance (Ω)	50	50
• Reflection coefficient at 3 GHz	0.025	0.025
• Insulation resistance ($G\Omega$)	≥ 5	≥ 10
• Test voltage (at sea level) (kV rms, 50 Hz)	2.5	4
• Working voltage (at sea level) (kV rms, 50 Hz)	1	2.7
• Screening effectiveness up to 1 GHz (dB)	>128	>128
• Outer contact resistance (m Ω)	≤ 0.5	≤ 0.5
• Inner contact resistance (m Ω)	≤ 1	≤ 0.8

Mechanical

• Torque of coupling mechanism (Nm)	≤ 8	≤ 30
• Cable retention (N)	>400	>1000

Environmental

• Temperature range ($^{\circ}\text{C}$)	-40 to +85 $^{\circ}\text{C}$
• Degree of protection (humidity)	IP67, IP68

Materials

• External parts	Passivated silver plated or electroless nickel plated brass
• Outer contact	Passivated silver plated brass
• Inner contact	Passivated silver plated Cu alloy
• Dielectric	TPX/PTFE
• Gaskets	High quality silicone



GCS114PAR

**STANDARD**

5438

Cable type :

5438

Reference :

EC7-50

Cable with standard UV resistant PE jacket, halogen free according to IEC 60754

FLAME RETARDANT

HLFR

Cable type :

5438-HLFR

Reference :

EC7-50-FR

Cable with UV resistant, halogen free and flame retardant jacket according to IEC 60754, IEC 60332-1, IEC 60332-3 Cat. C

CHARACTERISTICS**Construction**

- **Inner conductor**
 - Material corrugated copper tube
 - Diameter (mm) 17.3
- **Dielectric**
 - Material gas-injected cellular polyethylene
 - Diameter (mm) 43.0
- **Outer conductor**
 - Material corrugated copper tube
 - Diameter (mm) 46.6
- **Outer sheath**
 - Material black polyethylene
 - Thickness (mm) 1.7
 - Diameter (mm) 50.0

Mechanical

- **Minimum bending radius**
 - a) single bending (cm) 20
 - b) 15 repeated bends (cm) 40
- **Maximum pulling strength** (daN) 250
- **Recommended temperature range**
 - Storage -70 to +85°C
 - Installation -40 to +60°C
 - Operation -55 to +85°C
- **Maximum length per hoisting grip** (m) 70
- **Maximum hanger spacing** 1.5
- **Flat plate crush resistance** (kg/mm) 3
- **Bending moment** (Nm) 48
- **Weight** (kg/km) 1200

Electrical

- **Characteristic impedance** (Ω) 50 ±1
- **Nominal capacity** (pF/m) 76
- **Relative propagation velocity** (%) 88
- **Inductance** (μH/m) 0.190
- **DC-resistance at 20°C**
 - inner conductor (Ω/km) 1.4
 - outer conductor (Ω/km) 0.34
- **RF peak voltage** (kV) 5.7
- **RF peak power** (kW) 324
- **Cut-off-frequency** (GHz) 2.8
- **Insulation resistance** (MΩ.km) >>5000

Attenuation and power rating

Frequency (MHz)	Attenuation at 20°C ^(*) (dB/100m)	Mean power rating ^(**) (kW)
10	0.20	56.43
20	0.29	39.52
30	0.35	32.04
80	0.59	19.14
100	0.67	17.00
150	0.83	13.66
200	0.97	11.68
300	1.21	9.34
400	1.43	7.95
450	1.52	7.34
500	1.62	7.00
600	1.80	6.30
700	1.96	5.76
800	2.12	5.33
894	2.27	4.99
960	2.37	4.79
1000	2.42	4.67
1500	3.10	3.66
1700	3.34	3.39
1800	3.46	3.27
1880	3.56	3.18
2000	3.70	3.06
2170	3.89	2.91
2200	3.93	2.88
2300	4.04	2.80
2400	4.15	2.73
2500	4.26	2.66
3000	-	-
4000	-	-
6000	-	-

(*) nominal values

(**) Ambient temperature = 40°C; Temperature of inner conductor = 100°C; VSWR = 1.0; no solar loading



NF50A158M



716MV158M

CONNECTORS & TOOL

Reference	Description
716MV158M	7/16 DIN male, O-Ring
716FV158M	7/16 DIN female, O-Ring
716MA158M	7/16 DIN male, Sealant injection
716FA158M	7/16 DIN female, Sealant injection
NM50V158M	N male, O-Ring
NF50V158M	N female, O-Ring
NM50A158M	N male, Sealant injection
NF50A158M	N female, Sealant injection
SPTC50AV158M	Cable preparation tool
Inner ring (a)	Spare parts for cable preparation tool
Outer ring (b)	(Refer to installation instruction of the tool)
Spring (c)	
Cutting knife (d)	
Peeling knife (e)	
SIL-744 90ml	Sealant for connectors using sealant injection
SIL-744 310 ml	Sealant for connectors using sealant injection

Rem.: • Sealant for connectors using the sealant injection method must be purchased separately.
• EIA connectors available on request.



SPTC50AV158M

ACCESSORIES

Description	Reference
• Grounding clamps with parallel outlet	GCS158PAR
• Fixing clamps	see page 36
• Additional weatherproofing	see page 39
• Lace-up hoisting grip	HG-158
Pre-laced hoisting grip	HG-78-L see page 38

Specification of N-connectors 7/16 connectors

Electrical

• Nominal impedance (Ω)	50	50
• Reflection coefficient at 3 GHz	0.025	0.025
• Insulation resistance (G Ω)	≥ 5	≥ 10
• Test voltage (at sea level) (kV rms, 50 Hz)	2.5	4
• Working voltage (at sea level) (kV rms, 50 Hz)	1	2.7
• Screening effectiveness up to 1 GHz (dB)	>128	>128
• Outer contact resistance (m Ω)	≤ 0.5	≤ 0.5
• Inner contact resistance (m Ω)	≤ 1	≤ 0.8

Mechanical

• Torque of coupling mechanism (Nm)	≤ 8	≤ 30
• Cable retention (N)	>400	>1000

Environmental

• Temperature range (°C)	-40 to +85°C
• Degree of protection (humidity)	IP67, IP68

Materials

• External parts	Passivated silver plated or electroless nickel plated brass
• Outer contact	Passivated silver plated brass
• Inner contact	Passivated silver plated Cu alloy
• Dielectric	TPX
• Gaskets	High quality silicone



GCS158PAR

2 1/4"

**STANDARD**

5528

Cable type :

5528

Reference :

EC12-50

Cable with standard UV resistant PE jacket, halogen free according to IEC 60754

FLAME RETARDANT

HLFR

Cable type :

5528-HLFR

Reference :

EC12-50-FR

Cable with UV resistant, halogen free and flame retardant jacket according to IEC 60754, IEC 60332-1, IEC 60332-3 Cat. C

CHARACTERISTICS**Construction**

- **Inner conductor**
 - Material corrugated copper tube
 - Diameter (mm) 21.0
- **Dielectric**
 - Material gas-injected cellular polyethylene
 - Diameter (mm) 52.0
- **Outer conductor**
 - Material corrugated copper tube
 - Diameter (mm) 56.0
- **Outer sheath**
 - Material black polyethylene
 - Thickness (mm) 2.0
 - Diameter (mm) 60.0

Mechanical

- **Minimum bending radius**
 - a) single bending (cm) 25
 - b) 15 repeated bends (cm) 55
- **Maximum pulling strength** (daN) 300
- **Recommended temperature range**
 - Storage -70 to +85°C
 - Installation -40 to +60°C
 - Operation -55 to +85°C
- **Maximum length per hoisting grip** (m) 70
- **Maximum hanger spacing** 1.8
- **Flat Plate Crush resistance** (kg/mm) 4.8
- **Bending moment** (kg/km) 90
- **Weight** (kg/km) 1960

Electrical

- **Characteristic impedance** (Ω) 50 ±1
- **Nominal capacity** (pF/m) 76
- **Relative propagation velocity** (%) 88
- **Inductance** (μH/m) 0.190
- **DC-resistance at 20°C**
 - inner conductor (Ω/km) 0.55
 - outer conductor (Ω/km) 0.25
- **RF peak voltage** (kV) 6.8
- **RF peak power** (kW) 462
- **Cut-off-frequency** (GHz) 2.3
- **Insulation resistance** (MΩ.km) >>5000

Frequency (MHz)	Attenuation at 20°C ^(*) (dB/100m)	Mean power rating ^(**) (kW)
--------------------	---	---

10	0.16	71.71
20	0.24	50.00
30	0.29	40.40
80	0.50	23.87
100	0.56	21.13
150	0.70	16.87
200	0.82	14.34
300	1.04	11.36
400	1.23	9.60
450	1.32	8.95
500	1.41	8.41
600	1.57	7.53
700	1.72	6.86
800	1.87	6.31
894	2.01	5.89
960	2.10	5.63
1000	2.15	5.49
1500	2.79	4.24
1700	3.03	3.90
1800	3.14	3.76
1880	3.24	3.65
2000	3.37	3.51
2170	3.56	3.32
2200	3.59	3.29
2300	-	-
2400	-	-
2500	-	-
3000	-	-
4000	-	-
6000	-	-

(*) nominal values

(**) Ambient temperature = 40°C; Temperature of inner conductor = 100°C; VSWR = 1.0; no solar loading



NF50A214



716MV214

CONNECTORS & TOOL

Reference	Description
716MV214	7/16 DIN male, O-Ring
716FV214	7/16 DIN female, O-Ring
716MA214	7/16 DIN male, Sealant injection
716FA214	7/16 DIN female, Sealant injection
NM50V214	N male, O-Ring
NF50V214	N female, O-Ring
NM50A214	N male, Sealant injection
NF50A214	N female, Sealant injection
SG 214	Saw guide
SIL-744 90ml	Sealant for connectors using sealant injection
SIL-744 310 ml	Sealant for connectors using sealant injection

Rem.: • Sealant for connectors using the sealant injection method must be purchased separately.



SG214

ACCESSORIES

Type	Reference	Description
• Grounding clamp with normal outlet	EGK214	
• Fixing clamps		see page 36
• Additional Weatherproofing		see page 39

Specification of N-connectors 7/16 connectors

Electrical

• Nominal impedance (Ω)	50	50
• Reflection coefficient at 3 GHz	0.02	0.02
• Insulation resistance (GΩ)	≥5	≥10
• Test voltage (at sea level) (kV rms, 50 Hz)	2.5	4
• Working voltage (at sea level) (kV rms, 50 Hz)	1	2.7
• Screening effectiveness up to 1 GHz (dB)	>128	>128
• Outer contact resistance (mΩ)	≤0.5	≤0.5
• Inner contact resistance (mΩ)	≤1	≤1

Mechanical

• Torque of coupling mechanism (Nm)	≤8	≤30
• Cable retention (N)	>400	>1000

Environmental

• Temperature range (°C)	-40 to +85°C
• Degree of protection (humidity)	IP67, IP68

Materials

• External parts	Passivated silver plated or electroless nickel plated brass
• Outer contact	Passivated silver plated brass
• Inner contact	Passivated silver plated Cu alloy
• Dielectric	PTFE TPX/PTFE
• Gaskets	High quality silicone

EGK214



JUMPER CABLES

EUPEN offers jumper cables with 1/2" Hiflex cable (5092 / EC4-50-HF) or 1/2" standard cable (5128 / EC4-50) with soldered DIN 7/16 or N type straight and right angle connectors.

All metal contact parts are silver plated. They are designed for watertight applications and optimised jumper cable performances.

Features

- excellent return loss values
- very low bending radius
 - 30 mm for 1/2" Hiflex (5092) for single bending (36 mm for repeated bendings)
 - 70 mm for 1/2" standard (5128) for single bending (125 mm for repeated bendings)
- very low level of 3rd order intermodulation products
- easy, fast and reliable installation
- water tightness according to IP 68 (according EN 60529)
- longitudinal water tightness is provided by the special connector design (inner and outer conductors are soldered)
- the overmolding of the connector provides an additional mechanical stability

Product reference

EC4-vv-S-www-XYZXYZ

EC4 = 1/2" cable (5128)

vv = HF for Hiflex (5092)

S = soldered connector

www = length in cm

x = D for DIN 7/16 type connector

or **x** = N for N type connector

y = M for male or F for female

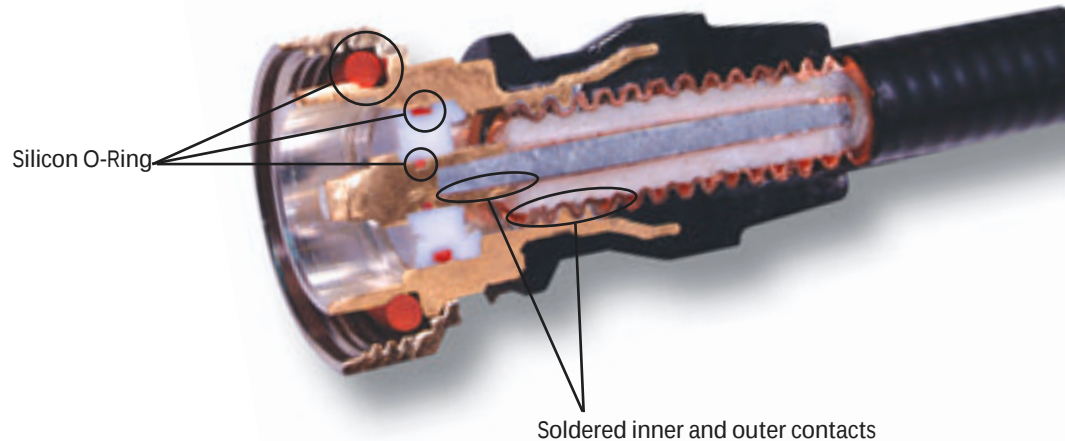
z = L for right angle connector

Marking

Manufacturer EUPEN - Week & Year of Production -

Product Ref. - Part N° EUPEN - S/N - coupling torque





Specification of 1/2" Hiflex jumpers 5092 / EC4-50-HF

800-1000 MHz 1600-2200 MHz

Electrical

• Return loss [Min] for		
7/16 straight - 7/16 straight (dB)	-31	-30
7/16 straight - 7/16 angle (dB)	-31	-26
N straight - N straight (dB)	-30	-28
N straight - N angle (dB)	-30	-27
N straight - 7/16 straight (dB)	-32	-30
N straight - 7/16 angle (dB)	-32	-27
• Attenuation per 100m		
at 20°C (dB)	11.4 (+connectors)	17.8
• Power handling [min],		
continuous (W)	750	500
• Level of intermodulation products		
Typical (dBc)	-162	-162
Max (dBc)	-155	-155
• Impedance (Ohm)	50 ±1	50 ±1
• RF Voltage rating [Peak] (V)	1130	1130
• Velocity of propagation (%)	82	82

Mechanical

• Minimum bending radius	
single (mm)	30
repeated (mm)	36
• Connector torque [nominal] (Nm)	28 (for 7/16 type) 12 (for N type)

Environmental

• Temperature range (°C)	
Installation	-40 to +60°C
Operating	-55 to +85°C
• Relative humidity (%)	10 to 100
• General environmental	corrosion and UV resistant

Specification of 1/2" Standard jumpers 5128 / EC4-50

800-1000 MHz 1600-2200 MHz

Electrical

• Return loss [Min] for		
7/16 straight - 7/16 straight (dB)	-31	-30
7/16 straight - 7/16 angle (dB)	-31	-26
N straight - N straight (dB)	-30	-28
N straight - N angle (dB)	-30	-27
N straight - 7/16 straight (dB)	-32	-30
N straight - 7/16 angle (dB)	-32	-27
• Attenuation per 100m		
at 20°C (dB)	7.9 (+connectors)	12.4
• Power handling [min],		
continuous (W)	750	500
• Level of intermodulation products		
Typical (dBc)	-162	-162
Max (dBc)	-155	-155
• Impedance (Ohm)	50 ±1	50 ±1
• RF Voltage rating [Peak] (V)	1600	1600
• Velocity of propagation (%)	82	82

Mechanical

• Minimum bending radius	
single (mm)	70
repeated (mm)	125
• Connector torque [nominal] (Nm)	28 (for 7/16 type) 12 (for N type)

Environmental

• Temperature range (°C)	
Installation	-40 to +60°C
Operating	-55 to +85°C
• Relative humidity (%)	10 to 100
• General environmental	corrosion and UV resistant

ACCESSORIES FOR CABLES

1. adapters

Eupen offers a wide range of inside-series and inter-series 7/16 DIN and N type adapters designed in **standard** and **precision** models.

Main features:

- Low reflection coefficient up to 3 GHz
- Low PIM (-162dBc)
- Cu-Be inner contacts for high contact force
- Silver plated
- Watertight IP68
- Corrosion resistant



a. Standard adapters

Standard adapters are characterised by a minimum Return loss of -34 dB up to 3 GHz.

<i>Description</i>	<i>Reference</i>
N male to 7/16 male	CAD50NM716M
N female to 7/16 male	CAD50NF716M
N male to 7/16 female	CAD50NM716F
N female to 7/16 female	CAD50NF716F
N male to N female	CAD50NMF
N male to N male	CAD50NMM
N female to N female	CAD50NFF
7/16 male to 7/16 female	CAD50716MF
7/16 female to 7/16 female	CAD50716FF
7/16 male to 7/16 male	CAD50716MM

For applications where high electrical performances

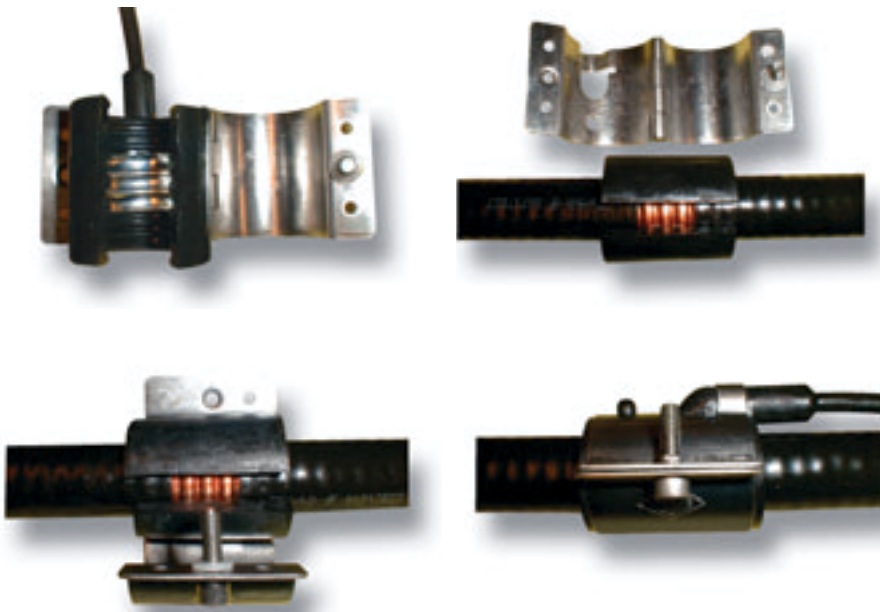
B. Precision adapters

and very low return loss are requested, and where high precision measurement equipment is requested - such as field test application in the cellular communication - we offer high precision adaptors featuring lowest return loss with guaranteed minimum -40 dB up to 3 GHz.

<i>Description</i>	<i>Reference</i>
N male to 7/16 male	CPRAD50NM716M
N female to 7/16 male	CPRAD50NF716M
N male to 7/16 female	CPRAD50NM716F
N female to 7/16 female	CPRAD50NF716F
N male to N female	CPRAD50NMF
N male to N male	CPRAD50NMM
N female to N female	CPRAD50NFF
7/16 male to 7/16 female	CPRAD50716MF
7/16 female to 7/16 female	CPRAD50716FF
7/16 male to 7/16 male	CPRAD50716MM

2. grounding clamps

grounding clamps with parallel outlet



The optimal grounding of the transmission line antenna to base station is a very weak point. In order to guarantee the best grounding we recommend the use of the EUPEN grounding clamps in order to ground the coaxial outer conductor to the antenna tower or ground wire. The main features of the Eupen grounding clamps are:

- **Ultra quick and easy installation**
- **No loose parts**
- **Lightning resistant to 100kA lightning current (wave type 10/350 μ s)**
- **Very low contact resistance < 1mOhm**
- **Waterproof according IP68 (5 m of water 2,5 hours) without additional tape or sealant**
- **Corrosion resistant**
- **Re-usable**

GROUNDING CLAMPS

Reference	GCS14	GCS38	GCS12X	GCS12PAR	GCS78PAR	GCS114PAR	GCS158PAR	EGK214
Cable type	5062	5088	5092	5128	5228 & 5228X	5328GL & 5328X	5438	5528
Cable size	1/4"	3/8"	1/2" Hiflex	1/2"	7/8" & 7/8" Hiflex	1 1/4" & 1 1/4" Hiflex	1 5/8"	2 1/4"
Outlet	normal	normal	normal	parallel	parallel	parallel	parallel	normal
see page	19	21	13	see above	see above	see above	see above	31
Cable cut (mm)	24	20	24	25	21	26	30	30

3. Fixing clamps

Eupen offers a large variety of clamps for different applications and steel ladder profiles in order to match customer's request.

Please don't hesitate to contact us for further details.

a. Eucatec cable clamps

QCC



- Standard C-Profile
- Flat section up to 11 mm
- Pipes up to D=12 mm

QCCP



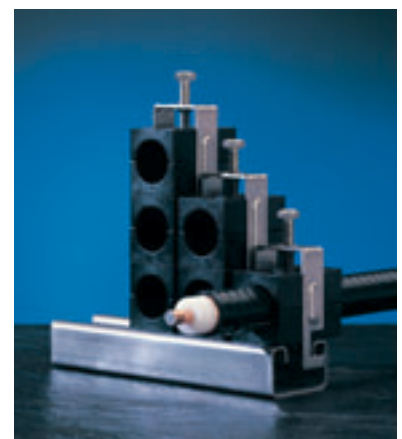
- Flat section up to 10 mm
- Pipes up to D=10 mm

QCU



- Standard C-Profile
- Flat section up to 25 mm
- Pipes up to D=23mm

All EUCATEC Cable Clamps are available in single, double or triple version.



B. Stainless steel clip Hangers



ES 90

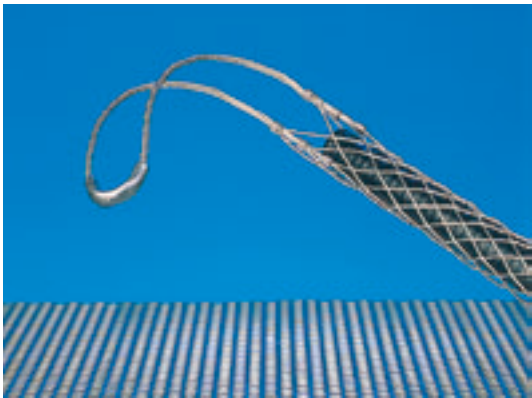
- For flat plate or angle: Type ES 90
- For round tubes or bars: Type ES 91
- For fixing with collar: Type ES 92

C. Various fixing clamps

Other clamp types available on request:
clip hanger, snap-in hanger, multiple
cable clamps, RFB/RFM (FIMO) ...



4. Hoisting grips



We offer two types of hoisting grips: the lace-up one and the pre-laced one.
Please refer to the table below.
Hoisting grips are used to raise the cable up the tower. They can be tied off as a permanent support. Use one hoisting grip for every 60 m cable length.

The hoisting grips are manufactured from high-grade tin coated bronze to provide highest corrosion resistance.

HOISTING GRIPS

Reference	1/2" cable	7/8" cable	1 1/4" cable	1 5/8" cable
Lace-up type	HG-12	HG-78	HG-114	HG-158
Pre-laced type	HG-12-L	HG-78-L	HG-114-L	HG-158-L

5. sealant sil-744 for connectors with sealant injection

In outdoor installations the Connector/Cable interface is very sensitive to water ingress.
The Sealant injection waterproofing method creates a quick, secure seal between the back nut and jacket / outer conductor.

The SIL-744 is recommended to be used with all EUPEN connectors where sealant injection is required.
The SIL-744 is supplied either in a box with a 90 ml tube of sealant including connector adapter and key or in a tube containing 310 ml.



With one tube the following quantities of connectors can be sealed:

SIL-744

Reference	3/8"	1/2"	7/8"	1 1/4"	1 5/8"	2 1/4"
with 90 ml tube	26...30	20...25	13...15	7...9	4...5	3...4
with 310 ml tube	90...103	69...86	44...51	24...31	13...17	10...13

6. Additional weatherproofing solutions

a. weatherproofing tape kit

If additional weatherproofing is required, it can be obtained with appropriate adhesive tapes wrapped around the cable/connector interface.

Eupen supplies a weatherproofing tape kit for additional protection of connector, cable and jumper interfaces. The tape kit includes selffusing butyl tape (65 mm x 2 m) and black PVC tape (25 mm x 10 m).

The following table indicates the quantity of connectors or splices which can be protected by tape kit:



WEATHERPROOFING TAPE KIT

Cable/Connector	1/4" & 3/8"	1/2" & 1/2"X	7/8"	1 1/4"	1 5/8"
Single connector	10	9	7	5	3
Splice	6	5	4	3	2

b. eucaseal

The Eucaseal is an additional and optional gel closure sealing system that provides a reliable sealing of coaxial connectors used at the transition between:

- jumper and antennas or the electric devices like TMA'S
- jumper and feeder cables exposed to the outside environment

Benefit

The housing contains an innovative gel material and provides an efficient moisture block. The ease of installation and the long-term protection makes it a reliable and cost effective solution.



ES-12-78



ES-12-114

Features

- Reliable protection over a wide temperature range: -30°C to 60°C
- Wraparound and no disconnection of the connector
- Quick and easy to install
- Easily removable and re-usable
- Gel material provides an effective barrier against ingress of water and other contaminants - IP 68 acc. EN 60529
- No tape, no mastics or tools required for installation and removal
- UV resistant
- Tested under extremely severe conditions, vibrations (acc. IEC 60068-2-6 Test Fc) and temperature cycles (acc. IEC 60068-2-14 Test Nb)
- Protection against excessive bending of the cable.



ES-12-158

EUCASEAL

<i>Application</i>	<i>1/2 jumper to antenna or box</i>	<i>1/2 jumper to 7/8 feeder</i>	<i>1/2 jumper to 1 1/4 feeder</i>	<i>1/2 jumper to 1 5/8 feeder</i>
Reference	ES-12-BOX	ES-12-78	ES-12-114	ES-12-158
Cable type	1/2" & 1/2" Hiflex	1/2" & 1/2" Hiflex to 7/8" or 7/8" Hiflex	1/2" & 1/2" Hiflex to 1 1/4" or 1 1/4" Hiflex	1/2" & 1/2" Hiflex to 1 5/8"
Connector type	only DIN 7/16 - max. length 60 mm - max. body diameter 27 mm - nominal distance between panel connectors 45 mm	N or 7/16	N or 7/16	N or 7/16



ES-12-BOX



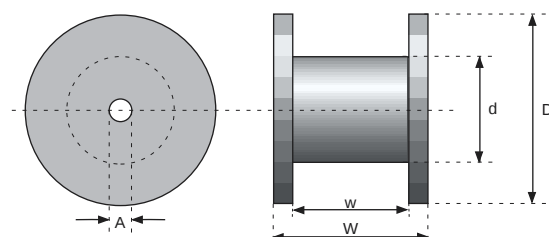
ES-12-BOX

CABLE PACKING AND HANDLING INFORMATION

The coaxial cable will be supplied on wooden drums made of planed wooden boards or plywood. In order to protect the cable during transportation and storage, the drums will be battened with wooden boards nailed on the flanges.

The drums are provided with a label containing cable information as cable type, cable length, production batch as well as handling information such as indication of the reeling direction (see label on right). The drums can be impregnated on request.

The standard drum sizes used for the different cable types are shown in the table below.



		<i>Cable length</i>		<i>Outer dim. *</i>	<i>Drum dim.</i>
<i>Cable type</i>	<i>Drum type</i>	(m)		<i>D</i> (cm)	<i>d</i> (cm)
EC1-50 (5062)	1/4"	HE 07	400-700	70	40
EC1-50-HF (5042)	1/4" Hiflex	HE 07	400-800	70	40
EC2-50 (5088)	3/8"	HE 07	400-600	70	40
EC2-50 (5088)	3/8"	HE 08	600-1000	75.5	25
EC4-50 (5128)	1/2"	HE 07	200-300	70	40
EC4-50 (5128)	1/2"	HE 08	300-600	75.5	25
EC4-50 (5128)	1/2"	HE 10	600-1000	100	47.5
EC4-50-HF (5092)	1/2" Hiflex	HE 07	200-300	70	40
EC4-50-HF (5092)	1/2" Hiflex	HE 08	300-900	75.5	25
EC5-50 (5228)	7/8"	HE 12	200-550	120	49
EC5-50 (5228)	7/8"	HE 13	550-850	130	72
EC5-50-HF (5228X)	7/8" Hiflex	HE 12	200-550	120	49
EC5-50-HF (5228X)	7/8" Hiflex	HE 13	550-850	130	48
EC6-50 (5328GL)	1 1/4"	HF 17S	100-400	170	90
EC6-50 (5328GL)	1 1/4"	HF 17	400-650	170	90
EC6-50 (5328GL)	1 1/4"	HF 20	650-1000	200	90
EC6-50 (5328X)	1 1/4" Hiflex	HF 17S	100-400	170	90
EC6-50 (5328X)	1 1/4" Hiflex	HF 17	400-650	170	90
EC6-50 (5328X)	1 1/4" Hiflex	HF 20	650-1000	200	90
EC7-50 (5438)	1 5/8"	HF 17S	100-250	170	90
EC7-50 (5438)	1 5/8"	HF 17	250/400	170	90
EC7-50 (5438)	1 5/8"	HF 20	350-700	200	90
EC12-50 (5528)	2 1/4"	HF 17	100-200	170	90
EC12-50 (5528)	2 1/4"	HF 20	200-400	200	90

* battened + 5 cm



Drum label



<i>Outer width</i> <i>W</i> (cm)	<i>Inner width</i> <i>w</i> (cm)	<i>Shaft hole</i> <i>A</i> (cm)	<i>Drum freight</i> <i>Volume</i> (m ³)	<i>Drum weight</i> <i>drum/battened drum</i> (kg)	<i>Cable weight</i> (kg/km)
41.6	40	65	0.20	7/9	110
41.6	40	65	0.21	7/9	80
41.6	40	65	0.21	7/9	140
52.4	50	65	0.31	16/35	140
41.6	40	65	0.21	7/9	235
52.4	50	65	0.31	16/35	235
70	64.4	65	0.73	16/44	235
41.6	40	65	0.21	7/9	200
52.4	50	65	0.31	16/35	200
53.2	49	80	0.8	25/60	530
76.2	72	80	1.34	40/90	530
53.2	49	80	0.8	25/60	460
76.2	72	80	1.34	40/90	460
74	63	90	2.2	232/320	970
102	91	90	3.06	380/472	970
116	104	90	4.75	440/556	970
74	63	90	2.2	232/320	830
102	91	90	3.03	380/472	830
116	104	90	4.75	440/556	830
74	63	90	2.2	323/320	1200
102	91	90	3.03	380/472	1200
116	104	90	4.75	440/556	1200
102	91	90	3.03	380/472	1960
116	104	90	4.75	440/556	1960

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